

Pretty Lake  
LaGrange County  
Supplemental Walleye Evaluation

Date of Survey: September 16, 2009

Biologist: Neil D. Ledet, District 2 Fisheries Biologist

Objective: The objective of this survey was to evaluate survival of walleyes that are stocked into Pretty Lake, especially survival of advance walleye fingerlings stocked in the fall of 2007, in accordance with work plan 300FW1F10D42617.

Methods: Fish collection effort consisted of 1.25 hours of pulsed D.C. nighttime electrofishing. Only walleye were collected. Two dip netters were used and approximately 95% of the shoreline was covered. Walleyes were measured to the nearest 0.1 in TL and weights were taken to the nearest 0.01 pound.

Summary: The Pretty Lake Conservation Club began stocking walleyes into Pretty Lake in the mid 1980's. The first Indiana Division of Fish and Wildlife (DFW) walleye stocking into Pretty Lake occurred in 1990 (Table 1). Walleyes were stocked again in 1993 by the DFW and have continued annually through 2007. These 1 to 2-in TL June walleye fingerlings were stocked at a rate of approximately 100 per acre according to state guidelines. To date, the DFW has stocked 312,070 June walleye fingerlings into Pretty Lake.

Pretty Lake was also stocked with 2,280 advanced fall walleye fingerlings in October 2007 after the fall 2007 evaluation showed that the June stocking failed. These fish averaged 8.9 in TL and were stocked at a rate of 12.4 per acre. They were produced at the Fawn River State Fish Hatchery during an experimental rearing project. Considering the relatively poor survival from June fingerlings in recent years, including the failed 2007 stocking and the number of fall fish available, Pretty Lake was selected to utilize these bonus fish.

Twenty-nine walleyes were collected during the September 16, 2009 survey. Twenty-eight of these were age-2 fish from the 2007 advanced walleye stocking while the other was an age-3

fish. At age 1, these walleyes were collected at a rate of 30.7 per electrofishing hour which was approximately 2.5 times greater than the age-1 catch rate in 1994, the previous high for age-1 fish at Pretty Lake (Table 2). It was also 12 times higher than the average age-1 walleye catch rate for all previous sampling at the lake, as well as the third highest observed for all fall electrofishing sampling for advanced walleye in Northern Indiana lakes (Table 3). On the night of the 2009 survey, the water temperature was 73° F.

The strong walleye year class established by the 2007 stocking continues into 2009 as 22.4 were collected per electrofishing hour. The next highest catch occurred at Pretty Lake in both 1995 and 1996 when 4.5 age-2 walleyes were collected per electrofishing hour.

Age-0 and age-1 walleyes were absent from the 2009 sample due to the fact that walleyes were not stocked into Pretty Lake in 2008 and the second stocking of advanced walleyes took place after the 2009 sampling effort. The 2009 advanced walleyes stocked at 10 per acre averaged 5.9 in TL at stocking, 3 in TL smaller than the walleyes stocked in 2007. As a result, the number of stocked walleyes per pound dropped from 4.6 in 2007 to 21.9 in 2009. It will be important to evaluate this stocking, especially in 2010.

Age-2 walleyes in the 2009 sample ranged in length from 12.4 to 15.6 in TL and averaged 14.1 in TL (Table 4). This is the widest length range observed at Pretty Lake to date and could be a reflection of the broad size range at stocking (6.4 to 11.5 in TL). This wide length range was also observed for this year class at age-1. Walleye growth at Pretty Lake has historically been above average. The average length for the 34 age-2 walleyes collected from the lake prior to 2009 is 16.1 in TL. The 2009 sample represented nearly 46% of all age-2 walleyes collected from the lake since the early 90's. With the average length of the 2009 age-2 fish being two inches less than what has been observed previously at Pretty Lake, a reduction in the overall average length for all age-2 walleye has occurred. While the exceptional survival of the 2007 stocking might be taxing the yellow perch and sunfish forage base, the average length of age-2 walleye is still near the low end of the size range observed at other Northern Indiana lakes (Table 5.)

Division of Fish and Wildlife (DFW) biologists have conducted 16 fall surveys at Pretty Lake to evaluate the June fingerling walleye stockings. A total of 27.24 hours of electrofishing were conducted during these surveys. This sampling effort produced 141 age-0, 67 age-1, 33 age-2 and 52 age-3 or older walleyes with average catch rates of 5.2, 2.5, 1.2 and 1.9 fish per hour respectively.

Based on the minimum fall catch rate of seven age-0 walleyes per nighttime electrofishing hour, only four of the 16 DFW June walleye stockings met the statewide criteria for success. Five walleye stockings were successful if you include the 1999 survey where 6.7 age-0 walleyes were collected per hour. Of the June walleye stockings, the 1993 stocking was the most successful followed by the 1998, 1994, 2001 and 1999 releases. During the 1993 fall survey, 20.5 age-0 walleyes were collected per electrofishing hour. During the 1994 and 1995 fall surveys, age-1 and age-2 walleyes from this year class were collected at a rate of 12.0 and 4.5 fish per hour respectively.

At Pretty Lake, one or two successful stockings every three or four years have provided good fishing opportunities for walleyes. For example, following successful stockings in 1993 and 1994, anglers harvested 150 walleyes weighing 270 pounds during the 1996 angler creel survey on Pretty Lake. Eleven percent of the 1996 Pretty Lake anglers were fishing specifically for walleyes while an additional 8% indicated they were fishing for walleyes in combination with another species (Koza 1996). Based on the criteria for success for harvest and interest as outlined in Walleye Management in Indiana, (Andrews 1994) the Pretty Lake walleye program in 1996 was successful.

Similar survival patterns of stocked June walleye fingerlings have been seen at other northern Indiana natural lakes. Walleye stockings during the initial few seasons were generally successful and developed a fishery. This early success was often followed by 1 to 3 years of poor or failed survival with a successful stocking often occurring in the next year. Although less pronounced, this survival pattern has also been seen in advanced fall fingerling stockings at Winona Lake (2003-2005) and to a lesser degree Crooked Lake. Although stocking advanced walleye fingerlings has been more consistent in establishing strong year classes, it should not be surprising to see a weaker year class immediately following an extremely successful stocking of

advanced fall fingerlings. Even under these circumstances, establishing a year class with advance fall fingerlings is far superior to June stocked fingerlings in these natural lakes.

While we can't control factors like the weather, forage production or predation, we can influence harvest. Increasing the minimum walleye size limit could protect these expensive hatchery fish through their second summer in the lake and the DFW should continue to explore the impacts of size and bag limits on population structure.

The DFW must also consider the size of the advanced walleye at stocking. Studies referenced by Kamp 2009 suggest that there is no difference in survival of June fingerlings and 4.0 in TL advanced fingerlings to age1 and that advanced fingerlings may need to be greater than 7.0 in TL for there to be a benefit over June fingerlings.

#### Recommendations:

1. The DFW should continue to pursue the production of advanced fall walleye fingerlings for stocking as addressed in previous Walleye Management Committee reports.
2. Advance walleye should be stocked into Pretty Lake in alternate years at a rate of 10 per acre with a minimum size of 7 in TL.
3. The DFW should continue to annually evaluate survival of fall stocked walleyes.
4. The DFW should continue to monitor our walleye populations and looking specifically at refining the use of advance walleye fingerlings as well as exploring the impacts of size and bag limits on the population structure.

Literature Cited:

Andrews, S., Committee Chairman 1994. Walleye management in Indiana. Committee Report. Indiana Division of Fish and Wildlife. Indianapolis, Indiana. 39 pp.

Indiana Department of Natural Resources 1997, Natural Lakes Strategic Plan

Kamp, Jeffrey M. and Gene R. Hatzenbeler 2009. Survival and growth of walleye fingerlings stocked at two sizes in 24 Wisconsin Lakes. North American Journal of Fisheries Management, pages 966-1000.

Koza, Larry A., 1996. A survey of the Pretty Lake fish population and fish harvest. Indiana Department of Natural Resources, Indianapolis, Indiana. 38 pp.

Submitted by: Neil D. Ledet, Fisheries Biologist  
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Approved by: Stu Shipman, North Region Fisheries Supervisor  
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Table 1. Division of Fish and Wildlife walleye stocking, sampling effort and catch at Pretty Lake, LaGrange County, 1990 through 2009.

Date Stocked	Number per Pound	Ave. Length	Number Stocked	Stocking Density	Gear	Effort	Date Sampled	Number Collected	Walleye Collected Per Electrofishing Hour or Net Lift				
									Age-0	Age-1	Age-2	Age-3+	Total
6/90	766	1.9	18388	100	DC	2	10/90	6	0	0	0	3.0	3.0
6/93	625	2	17350	94	DC	2	10/93	41	20.5	0	0	0	20.5
6/94	1028	1.6	19354	105	DC	2	10/94	45	9.5	12.0	0	1.0	22.5
6/95	640	1.9	20970	114	DC	2	10/95	27	5.0	3.0	4.5	1.0	13.5
6/96	711	1.7	19900	108	DC	8	5/96	80	0	1.1	4.5	4.4	10.0
6/96					GN	9	6/96	25	0	0.1	1.2	1.4	2.8
6/96					DC	1	6/96	6	0	2.0	2.0	2	6.0
6/96					DC	2	9/96	14	2.0	2.0	2.5	0.5	7.0
6/97	832	1.7	19136	104	DC	1.5	10/97	5	0	1.3	1.3	0.7	3.3
6/98	1131	1.5	18427	100	DC	1.5	10/98	32	16.0	0	2.7	2.7	21.3
6/99	824	1.8	20595	112	DC	1.5	10/99	26	6.7	6.7	1.3	2.7	17.3
5/00	2685	1	18795	102	DC	1.75	10/00	15	0	4.6	2.9	29	8.6
5/01	747	1.7	18675	101	DC	1.75	10/01	20	7.4	0	1.1	2.9	11.4
5/02	1520	1.4	17900	97	DC	1.5	10/02	8	0.7	1.3	2.0	1.3	5.3
5/03	794	1.7	18641	101	DC	1.75	10/03	13	5.1	0.6	0.6	1.1	7.4
5/04	1006	1.5	18400	100	DC	1.66	10/04	19	0.6	4.8	1.8	4.2	11.4
6/05	947	1.6	21781	118	DC	1.58	10/05	7	0	0	0	4.4	4.4
6/06	1,142	1.5	22,948	125	DC	1.25	9/06	9	5.6	0	0	1.6	7.2
6/07	1,479	1.4	20,810	113	DC	1.5	9/07	4	0	1.3	0	1.3	2.7
10/07	4.6	8.9	2,280*	12.4	DC	1.5	9/08	47	0	30.7	0.7	0	0
2008			None										
10/09	21.9	5.9	1,840*	10.0	DC	1.25	9/16	29	0	0	22.4	0.8	0

\*Advanced fall fingerlings  
DC-nighttime electrofishing  
GN-standard experimental gill net

Table 2. Fall nighttime DC electrofishing catch rates by age for walleyes collected from Pretty Lake, LaGrange County 1990 through 2009.

Year	Number Stocked	EF Effort (hours)	Number of Age- 0 / hour	Number of Age-1 / hour	Number of Age-2 / hour	Number Age-3 & older / hour
1990	18,388	2.0	0	0	0	3.0
1993	17,350	2.0	<b>20.5</b>	0	0	0
1994	19,354	2.0	<b>9.5</b>	<b>12.0</b>	0	1.0
1995	20,970	2.0	5.0	<b>3.0</b>	<b>4.5</b>	1.0
1996	19,900	2.0	2.0	2.0	<b>2.5</b>	0.5
1997	19,136	1.5	0	1.3	1.3	0.7
1998	18,427	1.5	<b>16.0</b>	0	2.7	2.7
1999	20,595	1.5	<b>6.7</b>	<b>6.7</b>	1.3	2.7
2000	18,795	1.75	0	<b>4.6</b>	<b>1.1</b>	2.9
2001	18,675	1.75	<b>7.4</b>	0	<b>1.1</b>	2.9
2002	17,900	1.5	0.7	<b>1.3</b>	2.0	1.3
2003	18,641	1.75	5.1	0.6	<b>0.6</b>	1.1
2004	18,400	1.66	0.6	4.8	1.8	4.2
2005	21,781	1.58	0	0	0	4.4
2006	22,948	1.25	5.6	0	0	1.6
2007	20,810	1.5	0	1.3	0	1.3
2007	2,280*					
2008	None	1.5	N/A	<b>30.7</b>	0.7	0
2009	1,840*	1.25	N/A	N/A	<b>22.4</b>	0.8

\*Advanced fall fingerlings

Table 3. Advanced fall walleyes stocked into Big Turkey, Crooked, Pretty, Simonton, Sylvan, Wall and Winona lakes and number of age-1 walleyes collected per nighttime DC electrofishing hour, 2000 through 2008.

Lake / Year	Date Stocked	Number Stocked	Number Stocked Per Acre	Average Size/range (Inches)	Number of Age-1 Walleye Collect Per Electrofishing Hour	Fall Sampled
Big Turkey (450 ac)						
2002	10/20	2,000	4.4	5 -7	0.5	2003
2003	11/01	2,100	4.7	5 -8	3.5	2004
2004	10/11	2,030	4.5	6 -8	5.3	2005
2005	10/16	2,030	4.5	6 -8	6.8	2006
2006	10/15	2,025	4.5	6-9	1.0	2007
Average #/hr					3.4	
Crooked (802 ac)						
2001	9/25	7,860	9.8	7.6	16.5	2002
2002	9/27	8,080	10.1	6.9	9.5	2003
2003	10/03	7,881	9.8	6.8	7.0	2004
2004	10/06	8,020	10.0	6.5	15.9	2005
2005	10/04	8,020	10.0	6.5	7.4	2006
2006	9/28	8,070	10.1	6.9	12.9	2007
Average #/hr					11.5	
Pretty Lake (184 ac)						
2007	10/07	2,280	12.4	8.9	30.7	2008
Simonton (299 ac)						
2000	10/24	2,000	6.7	5 - 8	8.5	2001
2001	10/11	2,000	6.7	5 - 8	3.2	2002
2002	10/01	2,200	7.4	5 - 8	5.7	2003
2003	10/21	2,000	6.7	5 - 8	2.4	2004
2004	10/11	2,000	6.7	5 - 8	8.1	2005
2005	10/10	1,500	5.0	5 - 8	9.4	2006
2006	10/4	1,220	4.1	6-8	2.1	2007
Average #/hr					5.6	

Table 3 continued

Sylvan (669 ac)						
2001	9/25 & 10/03	12,620	18.9	6.3	24.3	2002
2002	10/10 & 10/16	13,380	20.0	6.0	13.7	2003
2003	10/08 & 10/24	13,200	19.3	6.0	14.3	2004
2004	10/08 & 10/12	13,380	20.0	7.2	16.1	2005
2005	10/06 & 10/11	13,380	20.0	6.8	34.9	2006
2006	9/29 & 10/3	13,380	20	6.7	27.0	2007
Average #/hr					22.0	
Wall (141 ac)						
2005	10/11	1,400	10	5-7	34.0	2006
2006	10/3	1,400	10	5-8	6.7	2007
2007	10/17	1,400	10	6-8	4.7	2008
Average #/hr					15.1	
Winona (562 ac)						
2001	9/27	10,740	19.1	6.6	9.9	2002
2002	10/02 & 10/16	11,240	20.0	6.3	15.7	2003
2003	10/01 & 10/03	11,300	20.1	7.5	25.4	2004
2004	10/01 & 10/12	11,240	20.0	6.4	1.8	2005
2005	10/07 & 10/11	11,240	20.0	7.3	4.6	2006
2006	9/26 & 10/3	11,240	20	7.0	12.0	2007
Average #/hr					11.6	

Table 4. Number, length range and average length in inches of walleyes collected during fall nighttime D.C. electrofishing from Pretty Lake, LaGrange County, 1990 through 2009.

Year	Age 0			Age 1			Age 2		
	Number Collected	Length Range	Average Length	Number Collected	Length Range	Average Length	Number Collected	Length Range	Average Length
1990	0			0			0		
1993	41	7.2 - 9.1	8.2	0			0		
1994	19	7.0 - 9.5	8.9	24	12.4 - 14.5	13.8	0		
1995	10	7.5 - 8.5	8.1	6	11.5 - 12.5	12.1	9	14.8 - 15.9	15.4
1996	4	8.2 - 9.2	8.8	4	12.9 - 14.2	13.6	5	16.2 - 17.8	17.2
1997	0			2	12.9 - 13.1	13.0	2	15.0 - 16.9	16.0
1998	24	8.5 - 10.5	8.3	0			4	15.5 - 16.5	16.1
1999	10	8.6 - 10.6	9.5	10	13.4 - 15.4	14.2	2	16.2 - 16.3	16.3
2000	0			8	12.0 - 14.5	13.8	2	16.6 - 16.7	16.7
2001	13	8.9 - 10.8	9.6	0			2	16.2 - 16.3	16.3
2002	1		10.4	2	13.3 - 13.5	13.4	3	14.0 - 15.0	14.7
2003	9	8.7 - 10.3	9.6	1		12.2	1		16.3
2004	1		9.4	8	11.6 - 14.9	13.8	3	16.2 - 17.1	16.5
2005	0			0			0		
2006	9	8.1 - 9.5	8.7	0			0		
2007	0			2	14.7 - 14.9	14.8	0		
2008	0			46	10.1 - 14.0	11.1	1	15.9	15.9
2009	0			0			28	12.4 - 15.6	14.1
Totals	141		8.7	113		12.6	61		15.2

Table 5. Number and average length in inches of age-0 through age-2 walleyes collected during fall gill netting and or nighttime DC electrofishing surveys from six northern Indiana natural lakes, 1977 through 2008.

Lake	Age-0		Age-1		Age-2	
	Number Collected	Average Length	Number Collected	Average Length	Number Collected	Average Length
Bass		6.5		11.3		
B. Turkey	0		68	12.8	27	15.9
Clear	466	7.7	222	11.7	49	15.3
Max	660	7.7	190	11.9	73	14.7
Pretty*	141	8.7	113	12.6	61	15.2
Wall	0		68	11.6	33	14.5

\*Average was 16.1 in TL prior to the 2009 sample of 28 age-2 fish.